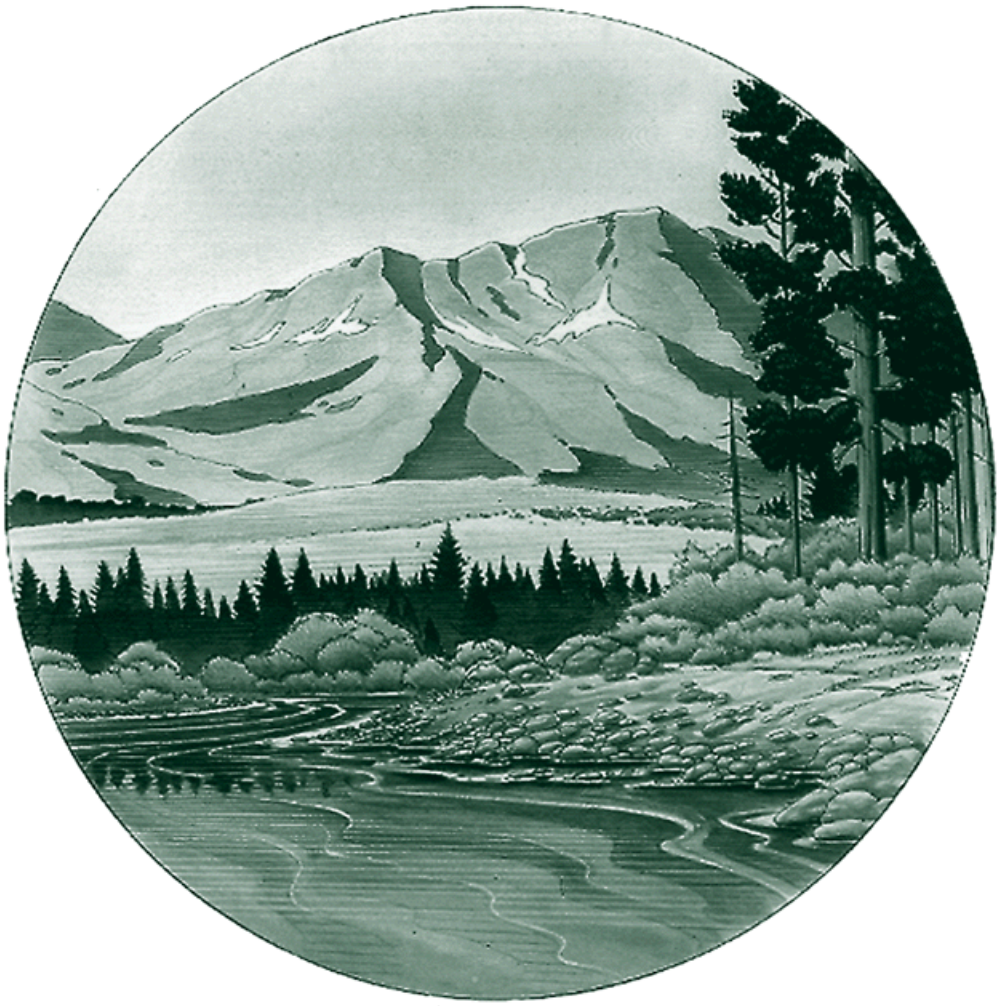
January 2000

1999 BPA HABITAT PROJECTS COMPLETED WITHIN THE ASOTIN CREEK WATERSHED, WA

Completion Report 2000



DOE/BP-11197-1

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1999 BPA Habitat Projects Completed

Within the Asotin Creek Watershed, WA

Ridge – Top to Ridge – Top Habitat Projects

1999 BPA Completion Report – January 2000

Cooperators:

Bonneville Power Administration
Washington State Conservation Commission
Washington State Department of Fish & Wildlife
Umatilla National Forest Service, Pomeroy Ranger District
Natural Resource Conservation Service

1999 BPA Project Completed

Within the Asotin Creek Watershed, WA

BPA Completion Report – January 2000

Project # 98-46	Purchase Order # 98AP11197
Project # 99-52	Purchase Order # 99BI19062
Project # 99-55	Purchase Order # 99AP19545

Prepared for:

Bonneville Power Administration
Washington State Conservation Commission
Washington Department of Fish and Wildlife
Umatilla National Forest, Pomeroy Ranger Dist.
Natural Resource Conservation Service

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A special thanks the Asotin County Commissioners, Asotin County Road Department and participating landowners for input and cooperation.

Thanks to Latah Tree Farms, Dayton Tractor Inc. and Menzel Crane and Transport for their long hours and minimal impact of our natural resources during in-stream and riparian habitat project construction; and the Nez Perce Salmon Corps for their labor and commitment to protecting and restoring Asotin Creek watershed habitats.

Additionally to Johnny Johnston, of WDFW, for his long hours and dedication and commitment to riparian plantings along Asotin Creek and its tributaries. We are truly blessed to have an individual donate over 210 hours of service helping to revegetate areas of concern. Thanks Johnny for all your hard work, you are truly “Great People.”

I would also like to take this time to recognize a true partnership between Conservation Districts. Anyone who has heard of “BPA Habitat Projects” in southeastern WA recognizes Asotin, Pomeroy and Columbia Conservation Districts. Terry and Duane have been traveling buddies for the past three years. The BPA process has brought us together and pulled us apart, but the glue and bonds have never broken. Terry Bruegman (the Blonde) – District Manager for Columbia Conservation District, Duane Bartels (Gramp’s) – District Manager for Pomeroy Conservation District and myself (the Kid) have stuck with this process and prioritized habitat projects that can be used as models as a result of our hard work and dedication to completing tasks. Without your friendships and guidance, Terry and Duane, our projects would not have been a success. And for that I thank you for putting up with me through it all.
You are both “Great Friends.”

Abstract

The Asotin Creek Model Watershed Program (ACMWP) is the primary entity coordinating habitat projects on both private and public lands within the Asotin Creek watershed. The Asotin Creek watershed covers approximately 325 square miles in the Blue Mountains of southeastern Washington in WRIA 35. According to WDFW's Priority WRIA's by At-Risk Stock Significance Map, it is the highest priority in southeastern WA. Snake River spring chinook salmon, summer steelhead and bull trout, which are listed under the Endangered Species Act (ESA), are present in the watershed.

The ACMWP began coordinating habitat projects in 1995. Approximately two hundred seventy-six projects have been implemented through the ACMWP as of 1999. Twenty of these projects were funded in part through Bonneville Power Administration's 1999 Columbia Basin Fish and Wildlife Program. These projects used a variety of methods to enhance and protect watershed conditions. In-stream work for fish habitat included construction of hard structures (eg. vortex rock weirs), meander reconstruction, placement of large woody debris (LWD) and whole trees and improvements to off-channel rearing habitat; thirty-eight were created with these structures. Three miles of stream benefited from riparian improvements such as vegetative plantings (17,000 trees and shrubs) and noxious weed control. Two sediment basin constructions, 67 acres of grass seeding, and seven hundred forty-five acres of minimum till were implemented to reduce sediment production and delivery to streams in the watershed.

Subbasin Description

Asotin Creek, a tributary to the Snake River (Rm 145) drains approximately 325 square miles of Asotin and Garfield Counties. Headwaters originate in Blue Mountains (6,200 ft) and flow east into the Snake River (800 ft) at Asotin, WA in WRIA 35 which is the highest priority in southeastern WA according to WDFW's At-Risk Stock Significance Map.

The Subbasin contains dryland and irrigated cropland, rangeland and forests. The Umatilla National Forest, Washington Department of Fish and Wildlife (WDFW) and Department of Natural Resource lands cover most of the headwaters, which is approximately 15% of watershed. The watershed is largely rural, comprised of farming (30%), ranching (30%), and timber enterprises (40%). Asotin, a small town, is located at the mouth of the creek and concentrated rural development extends upstream about three miles.

Bonneville Power Administration (Bonneville) funds are utilized to improve on "grass roots" public and agency cooperation and collaboration for habitat restoration on private and public property. This program continues to coordinate, assess, implement, and monitor fish and their habitats through cost-share programs in the Asotin Creek watershed. The program is consistent with the Independent Scientific Review Panel's recommendation to the North West Power Planning Council to support habitat restoration projects and the "Model Watershed" Programs.

Fish Status

Asotin Creek remains an important Snake River tributary for anadromous salmonid production in Washington and has been given the distinction of a reserve for wild steelhead under current WDFW management policy (Glen Mendel, WDFW Fisheries Biologist, personal communication). Charley Creek, an upper tributary, has some of the highest densities of juvenile steelhead in southeastern Washington according to recent WDFW fisheries surveys (Glen Mendel).

ESA listed stocks of summer steelhead, spring chinook salmon, and bull trout along with resident rainbow trout utilize the Asotin Creek watershed. Historical records indicate that Asotin Creek once harbored strong runs (> 800 adults) of summer steelhead and moderate runs (> 100 adults) of spring chinook salmon. However, recent surveys indicate few adult chinook salmon spawn in Asotin Creek and spawner escapement for steelhead has declined to about 200 (ACMWP, 1995). A 1993 Forest Service survey documented the presence of bull trout in the middle branch of the North Fork of Asotin Creek and the lower 1.5 miles of the South Fork of the North Fork of Asotin Creek, and in Charley Creek. The WDFW's Salmon and Steelhead Stock Inventory (SASSI 1992) indicates their presence only in the North and South Forks of Asotin Creek.

Watershed Assessment

The *Asotin Creek Model Watershed Plan (Plan)* was completed and printed in 1995. It was the first Bonneville funded Model Watershed Plan completed that deals specifically with watershed restoration and protection focused on fish habitat restoration.

Limiting Factors

Anadromous salmonid production is impacted by high summer stream temperatures, turbidity, sedimentation, loss of riparian vegetation, and lack of suitable resting and rearing pool habitat as recognized by the *Plan.* Over the past 100 years timber harvest, roads, farming, livestock management, recreational activities, flood plain encroachment and catastrophic flood events have contributed to habitat degradation.

Goals, Objectives and Strategies

The indigenous anadromous fish species most actively targeted for management in the Asotin Creek watershed are spring chinook salmon and summer steelhead. The goals for these species are to restore sustainable, naturally producing populations to support tribal and non-tribal harvest and cultural and economic practices while protecting the biological integrity and genetic diversity of these species in the watershed.

1. Reduce pre-spawner adult mortality
   a. riparian planting projects for long-term LWD recruitment for shade
   b. increase habitat complexity by adding LWD into in-stream projects
   c. increase pool quantity and quality, decrease width/depth ratio by in-stream structures, and long-term natural floodplain and channel restoration

2. Increase incubation success
   a. continue upland cost-share for sediment reduction projects
   b. in-stream structures designed to scour and sort spawning gravels
   c. riparian plantings for streambank stabilization and LWD recruitment
   d. riparian management plans for alternative water and fencing projects

3. Increase juvenile salmonid survival
   a. in-stream habitat restoration according to sound fluvial geomorphic principals
   b. increase pools w/LWD to improve over-winter survival of juveniles
   c. decrease width and increase stream depth
   d. identify cool water refugia and protect and restore in-stream and riparian habitat
   e. construct off-channel rearing areas from springs and add LWD component for habitat complexity
   f. riparian plantings for shade, cover and LWD recruitment
   g. riparian management plans with fencing and off-site watering

4. Manage Asotin Creek as a reserve for wild steelhead

5. Begin planning for spring chinook re-introduction with an appropriate stock

The broad general strategies used to achieve the habitat objectives include protecting and restoring prioritized habitat through the use of in-stream, riparian and upland Best Management Practices. Hatchery steelhead will not be released into Asotin Creek.

Research, Monitoring and Evaluation

The District has contracted with Northwest Management, Washington State University, Washington Department of Fish and Wildlife, and the Natural Resource Conservation Service to monitor pre- and post-habitat restoration projects, chemical and physical attributes as well as temperature, riparian habitat, and upland sediment reduction practices. Baseline information is being documented for restoration activities, and to determine effectiveness of projects addressing limiting factors. WDFW is continuing to monitor the spring chinook and steelhead populations in Asotin Creek. This monitoring includes spawning surveys and juvenile population estimates.

Where are we and What Else Needs to be Accomplished

Key components of the Watershed Plan:

Objectives of the Plan	*Proposed in Plan*	*Accomplished to Date*
Stream and Riparian		
Riparian Plantings	36,000 linear ft	30,000 linear ft
Off-Channel Rearing Sites	6	2
Meander Reconstruction	2,600 linear ft	1,600 linear ft
In-Stream Habitat Structures	144	327
Riparian Fencing	26,400 linear ft	27,000 linear ft
Forestland		
Stockwater/Wildlife Ponds	6	3
Tree Plantings	30 acres	30.4 acres
Critical Area Plantings	50 acres	None to Date
Rangeland		
Cross Fencing	26,400 linear ft	3,034 linear ft
Well Developments	4	1
Cropland		
Permanent Grass Cover	3,500 acres	658 acres
Terraces	150,000 linear ft	55,000 linear ft
Sediment Basins	40	41
Grass Waterways	10 acres	3 acres
Filter Strips	4 acres	2 acres
Direct Seeding	---	745.5 acres

Watershed restoration work remains to be done in the riparian and uplands alike. Two flood events resulted in reduced riparian vegetation and loss of pool habitat in 1996 and 1997. Some additional in-stream work is needed to restore pool to riffle ratios for adults and juveniles. Monitoring & Evaluation remains to be completed as identified by the Asotin Creek Technical Advisory Committee as well as habitat improvement and monitoring projects. This periodic re-evaluation of program effects will help to determine successes or failures. Riparian vegetation planting methods need to be improved and increased riparian buffer project participation is needed. Steelhead and bull trout distribution, abundance, and habitat use in George Creek, a major tributary of Asotin Creek should be determined. Projects to enumerate adult steelhead returns and smolt production in Asotin Creek will be conducted.

Action by Others

USDA – 68 landowner contracts - 16,967.7 acres of Conservation Reserve Program (CRP) in Asotin Creek watershed
– $875,040 annually paid out to watershed CRP contracts for 10 years

USDA – 3 landowner contracts (FY 1998) – 787.7 acres of Environmental Quality Incentive Program (EQIP) in Asotin Creek watershed
$19,497.03 annually paid out to watershed EQIP contracts for 3 years
BMP's no-till, pasture/hayland planting, nutrient & pest management, sediment basin and grass waterways and summerfallow reduction

USDA – 2 landowner contracts (FY 1999) – 803.9 acres of EQIP in Asotin watershed
$20,097.50 annually paid out to watershed EQIP contracts for 3 years
Best Management Practices: no-till, nutrient & pest management, sediment basin and grass waterways and summerfallow reduction

USDA – 1 landowner contract – WHIP in Asotin Creek watershed
Wildlife Habitat Incentives Program $6,910 funded for off-channel rearing areas and wire and rock fences to reduce vehicle damage to WDFW ground

Forest Service – Pomeroy Ranger District – $59,750.00 for FY 1998
Road obliteration, cut slope plantings using native trees and grass, fencing projects, prescribed fire and habitat restoration projects

Washington State Conservation Commission – *Water Quality Allocation Grant* –
1996 – Lick Creek Water Gap Fencing Project w/Forest Service $1,501.64
1997 – Hood Alternative Water Development $13,816.01

Washington State Conservation Commission – *Competitive Grant* – In-Stream Projects
1996 – Schlee Alternative Water Development repairs $894.62
1996 – Headgate Park In-Stream Habitat and Monitoring Project $21,351.76
1996 – North Fork Asotin Creek In-Stream Habitat Project $16,631.25

Washington State Conservation Commission – *Competitive Grant* – Upland Cost-Share
1996 – 1999 – Upland Best Management Practices to reduce erosion
$78,733.53 Cost-Share paid by Grant $26,244.52 paid by Landowners

Washington State Conservation Commission – *Upland Implementation Grant*
1997 –1999 – Upland Best Management Practices to reduce erosion
$15,552.09 Cost-Share paid by Grant $30,077.83 paid by Landowners

Washington State Conservation Commission – *Water Quality Monitoring Grant*
1997 - 1999 - Grant with WSU to monitor water quality in Asotin Creek
$37,000.00 for salaries, benefits and contracts with WSU

Washington State Conservation Commission – *Competitive Upland BMP Grant*
2000 – 2001 – Grant to Cost-Share Upland BMP's with private landowners
$66,000.00 for salaries and cost-share funds

Washington Department of Fish and Wildlife – LSRCP
1980 – Present – Monitoring spring chinook & steelhead populations

HB 2496 Habitat Restoration Block Grant – Upland Cost-Share
1998 – Upland Best Management Practices to reduce erosion
$1,849.44 Cost-Share paid by Grant $1,849.44 paid by Landowners

HB 2496 Habitat Restoration Block Grant – In-Stream Habitat Restoration Projects
1998 - $123,150.56 100% Cost-Share on prioritized habitat restoration projects riparian fencing 28,165 ft, two in-stream projects 42 pools and tree plantings

Governor's Salmon Recovery Funding Riparian and Upland Best Management Practices
1999 - $236,705 - two riparian fencing project W/ long-term lease and nine direct seeding contracts for 5 years on 1,579 acres of cropland to reduce erosion by 90%

Continued efforts in the basin are needed by private landowners, USFS, WDFW, and others to protect and increase the size and complexity of riparian vegetation buffers and to reduce sediment delivery to Asotin Creek.

Past Accomplishments

1991 - Asotin Creek Water Quality Monitoring Project
1993 - Initiated Collaboration with Citizens and Agency Representatives on Sensitive Fish and Wildlife Resource Issues
1994 – Agricultural Collaboration with citizens and agency represenatives on sensitive fish and wildlife resource issues
1994 – Continued intensive tree planting efforts on Asotin Creek and its tributaries
1994 – Completed watershed analysis for Asotin Creek watershed
1995 – ISCO water sampling units and HOBO temperature meters deployed throughout the watershed
1995 - Bonneville Early Action Projects completed on Asotin Creek
1995 – *Asotin Creek Model Watershed Plan* completed and printed
1995 – Contined tree planting efforts with local schools, boy scouts, girl scouts and volunteers
1995 – WCC grant funding for upland and riparian restoration projects in Asotin Creek watershed from the WA State Legislature
1995 – Frost free watering troughs installed at three locations in watershed
1996 – Continue water quality and temperature and monitoring throughout watershed
1996 – Continue tree planting efforts with local schools and volunteer groups
1996 – Initiated Bonneville Early Action in-stream habitat restoration projects
1996 – Implemented Headgate Park pre- and post- monitoring of habitat restoration projects funded by WCC
1997 – Completed technical report for Headgate Park pre- and post-habitat and resulting changes in pool habitat avalability and abundance of juvenile steelhead
1997 – Continued tree planting projects
1997 – Bonneville funding used for upland and riparian habitat restoration projects
1997 – WCC funding for upland sediment reduction practices in watershed

1997 – Initiated Natural Resource Conservation Service (NRCS) and ACCD Meander Reconstruction habitat monitoring
1997 – Completed 11 channel and fish habitat improvement projects on Asotin Creek
1997 – Completed 54 sediment basin cleanouts in Asotin County
1997 – Completed 5 riparian fencing projects on Asotin Creek
1997 – Supplied four aquariums to local schools for "Salmon in Classroom" project
1997 – Completed two brush revetment / streambank protection projects with students
1997 – "*Model Watershed Newsletter"* receives 3rd place in national competetion
1998 – Held first Envirothon competition for local schools
1998 – Intensive tree planting efforts using mechanical means to plant willow and cottonwood trees. Students and volunteers planted rooted stock such as ponderosa pine and blue elderberry
1998 – Continue Headgate Park post-habitat restoration monitoring
1998 – Continued Bonneville funding for upland sediment reduction, riparian/floodplain management and in-stream restoration projects
1998 – Initiated water quality and storm event sampling on Asotin Creek with Washington State University (WSU)
1998 – Initiated WDFW pre- and post- habitat restoration monitoring
1998 – Completed reports for 1997 Bonneville Habitat Restoration Projects including photo documentation, expected benefits, description and costs
1998 – Completed aerial surveys of upland and riparian habitat restoration projects and photo documentation
1998 – Initiated NRCS and ACCD sediment basin monitoring funded by WCC
1998 – Continued NRCS and ACCD Meander Reconstruction monitoring
1998 – Completed 19 fish habitat restoration projects in Asotin Creek watershed
1998 – Completed 6 riparian fencing projects along Asotin Creek
1998 – Completed 18 sediment basin cleanouts in Asotin Creek watershed
1998 – Released 600 trout fry through Salmon in the Classroom Project
1999 – Iniating natural resource newsletter for 4th – 6th graders in Asotin County Schools
1999 – Completed 6 fish habitat restoration projects in Asotin Creek watershed
1999 – Intensive spring tree planting efforts using mechanical means to plant willow, cottonwood and conifir trees.
1999 – Continued WDFW pre- and post- habitat restoration monitoring.
1999 – Iniated Fall Tree Planting Trials for rooted conifers and cottonwoods on Northfork of Asotin Creek.
1999 – Began 5-Year Minimum Till Program in uplands (840.90 acres enrolled).
1999 – Received WCC Competitive Upland BMP Grant for cost-share practices.
1999 – Initiate winter time snorkeling for in-stream structures for juvenile use
1999 – Released 450 trout fry through Salmon in the Classroom Project
1999 – Held 2nd Annual Envirothon Program with local schools
1999 – Hands-on educational opportunities to 4th graders – Water Quality Monitoring
1999 – Provided watershed tours to WSU Students, WCC, and Gov's Salmon Team
1999 – Hosted Model Wateshed Coordinators Meeting

1999 BPA Salmon Funding Expended

Category	Costs	Percentages
Monitoring and I & E	$12,938.43	10 %
In-Stream	$29,981.81	22 %
Riparian	$42,910.96	32 %
Upland	$22,782.79	17 %
Coordinator Budget	$25,040.63	19 %
TOTALS	$133,654.62	$133,654.62

Year	Practice	Units	Costs
1999	Monitoring and I&E		$12,938.43
1999	In-Stream Projects	6 sites	$29,981.81
1999	Direct Seeding 5 yr	745.5 ac	$20,128.50
1999	Sediment Basin Construction	2 sites	$660.00
1999	Grass Forb Plantings	67 ac	$1,994.29
1999	Tree Cuttings and Plantings	13,500 trees	$42,910.96
1999	Coordinators Budget	1 yr	$25,040.63
1999	*TOTALS*		*$133,654.62*

81 % of Funding for On-the-Ground Habitat Projects

19 % of Funding for Administration

Project: *Asotin Watershed Channel & Riparian Restoration*
Project # 98-46 (BPA # 98AP11197 & 97AP36971)
Project # 99-55 (BPA # 99AP19545)

Background: The 1999 *Asotin Watershed Channel and Riparian Restoration Projects* were identified by co-managers, NRCS and Conservation District personnel and private landowners. Project sites are located in the mainstem of Asotin Creek with one project on the South Fork of Asotin Creek. Seventeen individual sites were identified and this is the seventh year of riparian tree planting projects. Valuable experience has been gained and current riparian issues are being addressed. Previously trees and shrubs were planted utilizing volunteers, students and Salmon Corps, but due to WDFW requests, large equipment with superior hydraulics were utilized to get plantings further into the water table.

Objectives: The *Asotin Watershed Channel and Riparian Restoration Projects* are intended to improve spring chinook, summer steelhead, and bull trout habitat by meeting the following objectives:

1. Riparian planting projects for long-term LWD recruitment for shade
2. Riparian plantings for streambank stabilization and LWD recruitment
3. Riparian management plans with fencing and off-site watering

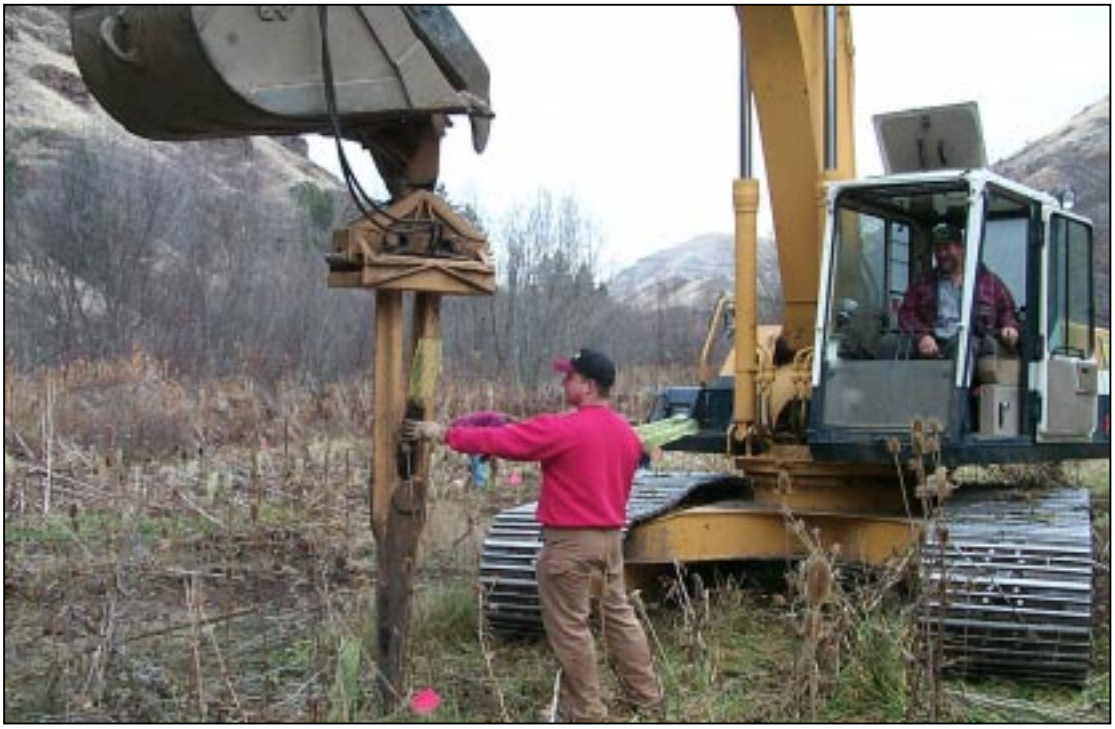
Projects: To achieve these goals seventeen individual riparian vegetation projects were completed. Volunteers, including local students were utilized to plant willow whips at certain sites. A small track hoe excavator with a stinger attachment was used to plant willow and cottonwood whips. The bucket attachment was utilized to dig holes that were planted with dormant rooted stock and backfilled with dirt. We also utilized a stinger attachment on a full size track hoe excavator and a ripper behind a D-8 Cat. Native trees and shrubs included: four different varieties of willow whips, cottonwood whips, red osier dogwood, blue elderberry, ponderosa pine, douglas fir and quaking aspen. In the fall of 1999 we additionally planted 5,400 rooted ponderosa pine and western white pine on the northfork of Asotin Creek as a trial for fall rooted plantings. We will be planting rooted material in the spring and comparing the success rates.

Results: The projects listed above resulted in approximately 17,000 trees and shrubs under 98-46 and 5,400 rooted pine trees under 99-55. Project sites were seeded to grass and some sites will be fenced to exclude cattle.

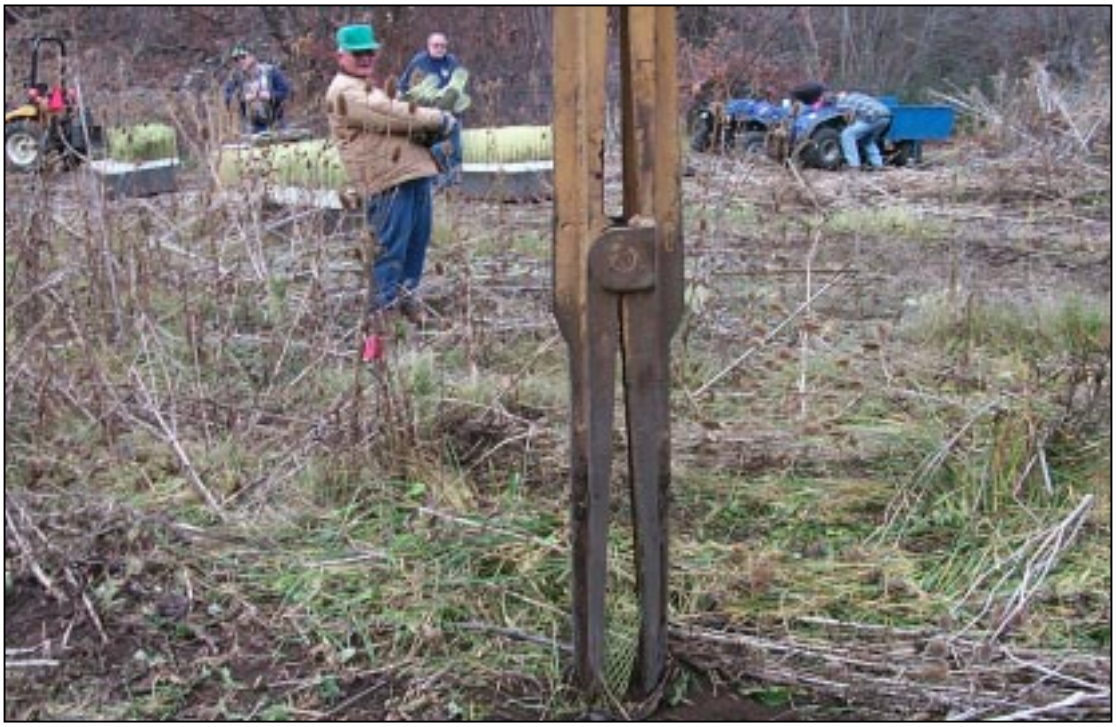
Start Date:	April 1, 1999	November 15, 1999
Completion Date:	June 3, 1999	November 23, 1999

Total Costs: $7,707.40 + $6,904.12 + $29,818.19
BPA Costs: $44,432.71

1999 Fall Rooted Plantings on Asotin Creek

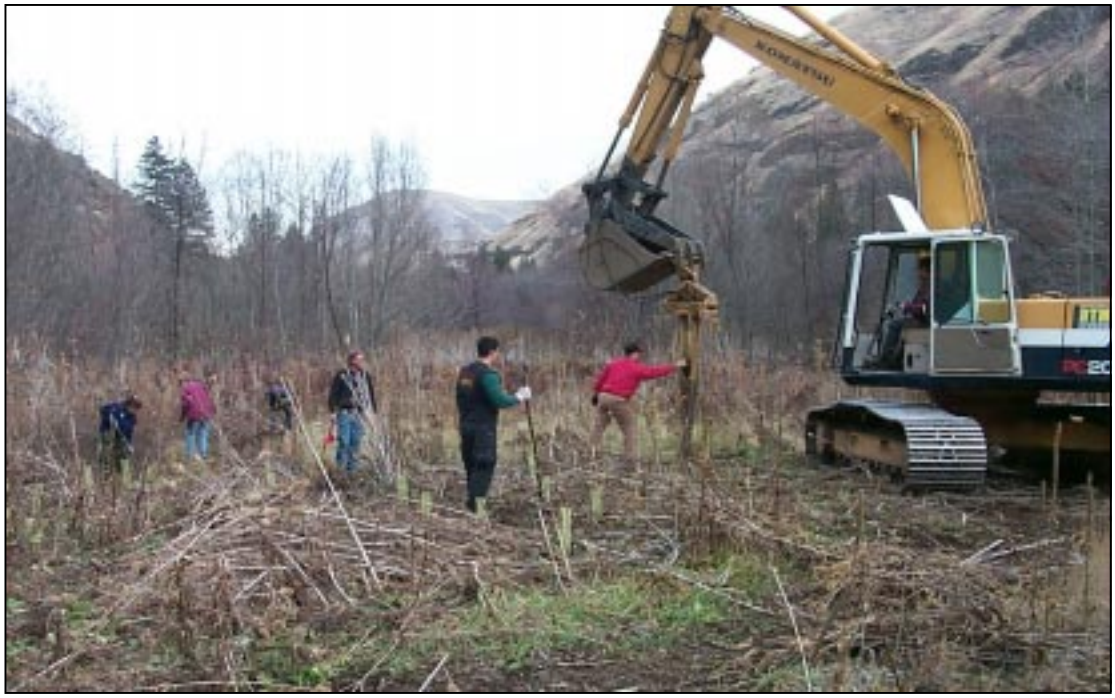


Inserting rooted ponderosa pine tree into stinger for planting

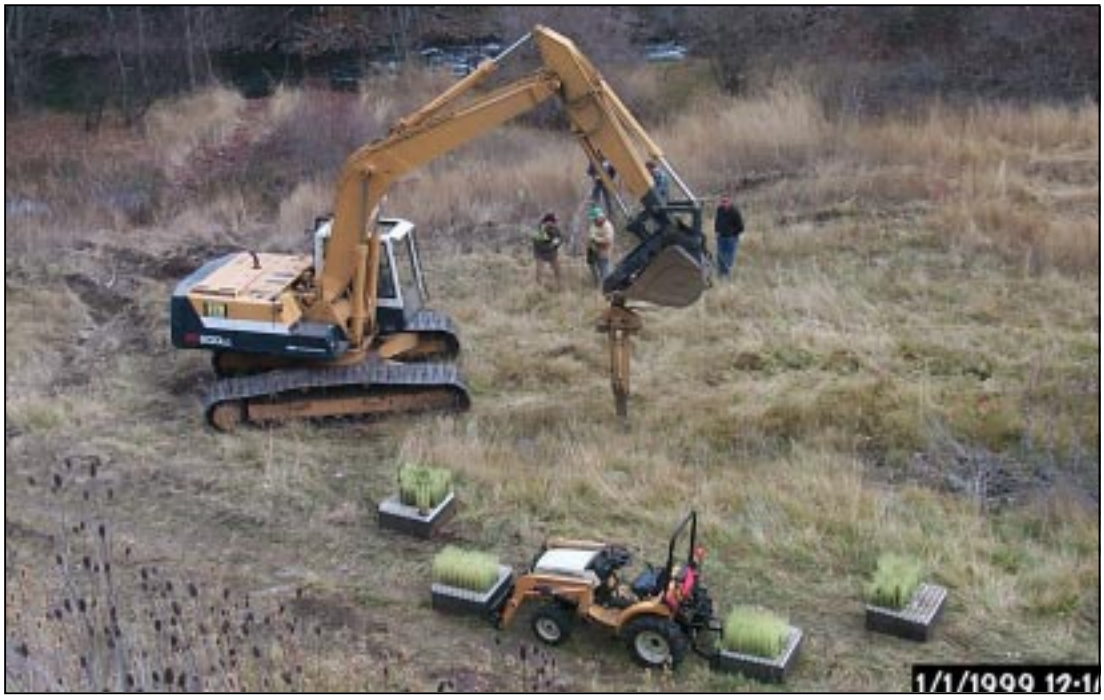


Ponderosa pine tree planted and stinger being pulled out of the ground
(notice support: small tractor, four wheeler w/trailer & boxes with trees)

1999 Fall Rooted Pine Planting Trials on Asotin Creek



Ponderosa & White Pine planting trials on N.F. of Asotin Creek to evaluate fall success



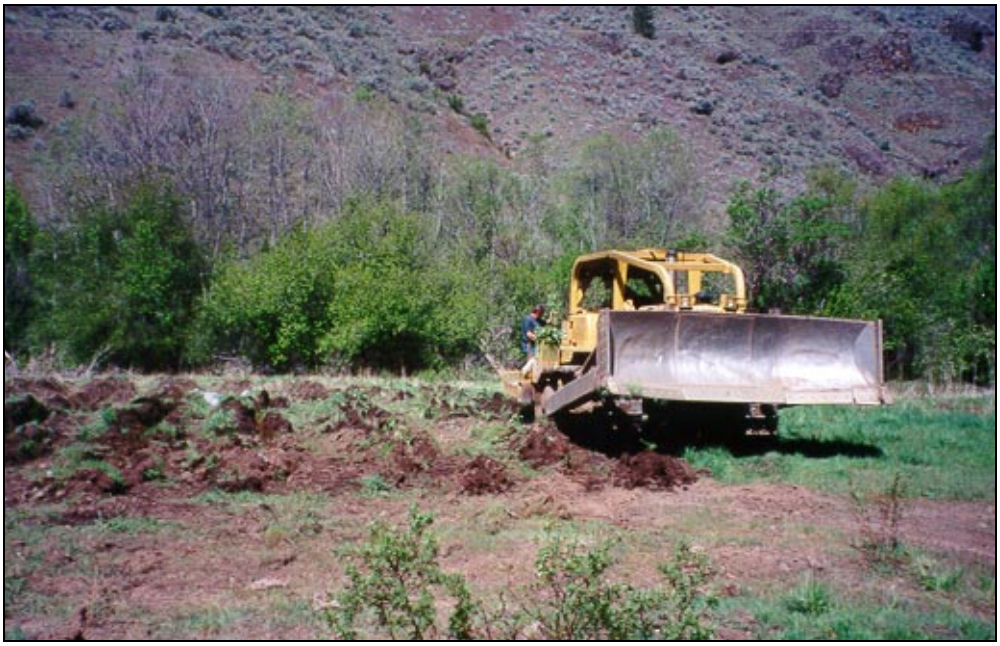
Trial sites of three different sources of ponderosa & one western white pine

1999 Rooted Cottonwood Plantings

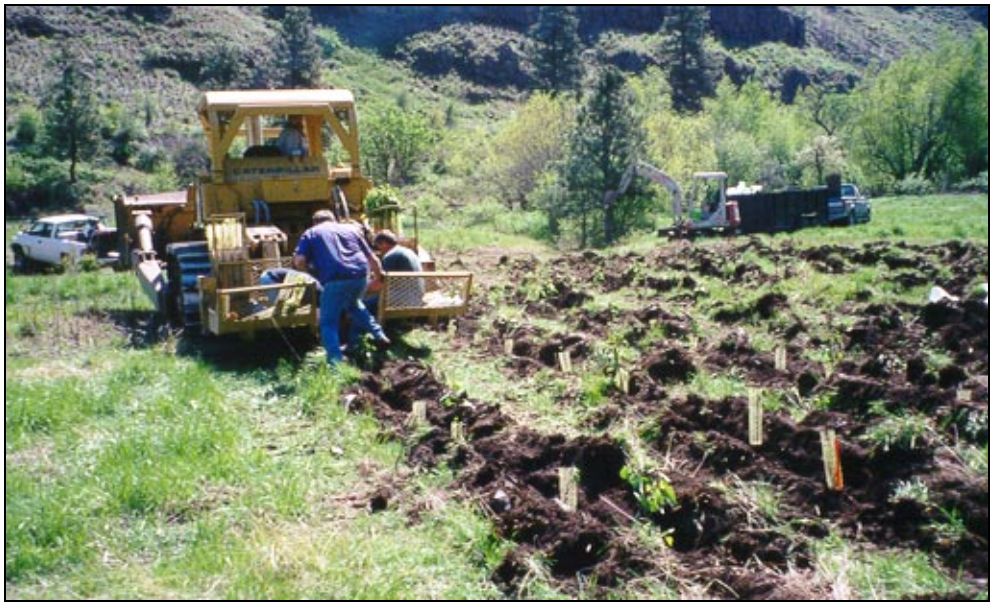
Track hoe excavator with stinger attachment for planting rooted cottonwood whips

Stinger pushed into cobble and releasing rooted material

1999 Rooted Cottonwood Plantings



D-8 Cat with ripper attachment planting rooted cottonwood whips



Planting WDFW ground along south fork of Asotin Creek

1999 Riparian Planting Projects on Asotin Creek, WA

Holes were dug using trackhoe in background and waiting for dirt

Dirt being carried to holes and Ponderosa Pine Trees planted into dirt

Salmon Corps Revegetating 1998 In-Stream Habitat Restoration Projects

Project: *Asotin Creek Channel Restoration*
Project # 99-55 (BPA # 99AP19545)

Background: The 1999 *Asotin Creek Channel Restoration Projects* were identified by co-managers, NRCS and Conservation District personnel and private landowners. Project sites are located in the mainstem of Asotin Creek with one project on the South Fork of Asotin Creek. Six individual sites were identified and this is the fourth year of in-stream habitat projects. Valuable experience has been gained and current in-stream issues are being addressed. Previously structures were installed to create pool habitat, but due to WDFW requests, large woody debris was placed into pools during construction to add complex fish habitat.

Objectives: The *Asotin Creek Channel Restoration Projects* are intended to improve spring chinook, summer steelhead, and bull trout habitat by meeting the following objectives:

1. Increase quantity and quality of pool habitat
2. Decrease stream width and increase stream depth
3. Install in-stream structures designed to scour and sort spawning gravels
4. Increase habitat complexity by adding LWD into in-stream structures
5. Reduce stream sediment loads and movements
6. Increase bank stability and improve interaction between channel and floodplain
7. Accelerate the recovery of native riparian vegetation through seeding and planting

Projects: To achieve these goals six individual in-stream projects were completed. In-stream habitat structures included: vortex rock weirs, J hooked rock vanes, LWD overhang and root wads placed into pools for complex cover. In all, 38 structures were installed with the above listed structures and 860 ft of LWD overhang affecting 1,145 total feet of stream.

Results: The structures listed above created 38 pools with LWD for complex habitat. Project sites were seeded to grass and some sites were fenced to exclude cattle. Sites were planted with native trees and shrubs the following spring.

Start Date: July 15, 1999
Completion Date: September 3, 1999

Total Costs: $41,933.08
BPA Costs: $29,981.81
Cost-Share: $11,951.27

1999 Asotin Creek In-Stream Habitat Projects

Projects	*BPA Costs*	*HB 5595 Costs*	*Total Costs*	*# of Pools*
Koch #2	$6,213.58	$3,096.25	$9,309.83	8
Heitstuman #3	$3,627.54	$2,261.34	$5,888.88	2
Theissen #5	$10,440.96	$4,258.50	$14,699.46	16
Jungert #6	$3,044.85	$2,335.18	$5,380.03	9
Schlee #7	$3,586.93	00.00	$3,586.93	1
Koch #8	$3,067.95	00.00	$3,067.95	2
Northfork *	00.00	00.00	$18,000.00 *	36 *
Totals	*$29,981.81*	*$11,951.27*	*$41,933.08*	*38*

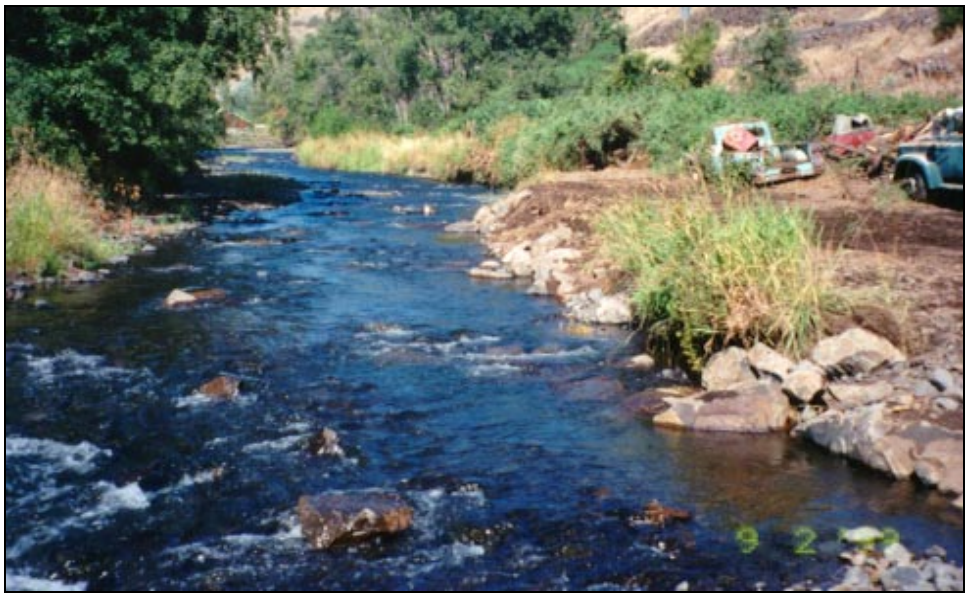
* Umatilla National Forest – Pomeroy Ranger District Project, not added to totals

Total Structures

Large Root Wads (LWD) – 23
Total Stream Feet – 1,145 ft
Feet of LWD – 860 ft
J Hook Rock Vanes – 9
Vortex Rock Weirs – 1
3 Boulder Clusters – 5
Total Pools – 38

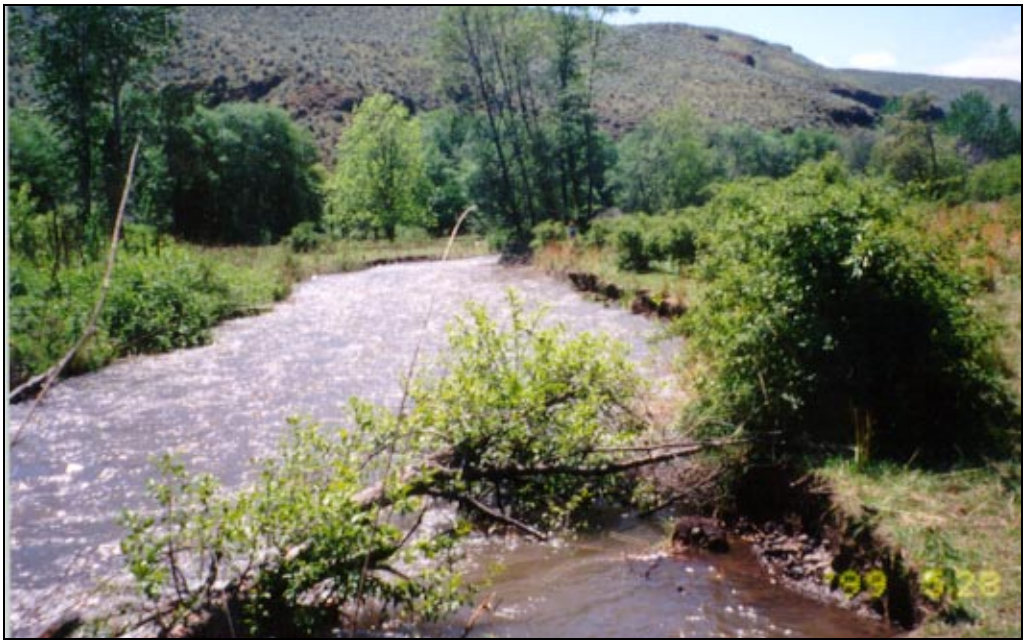
Jungert In-Stream Habitat Project

Pre-construction project site, riffle-glide area with limited pocket water



Four J-hook rock veins and five 3 boulder clusters w/other random boulder placements

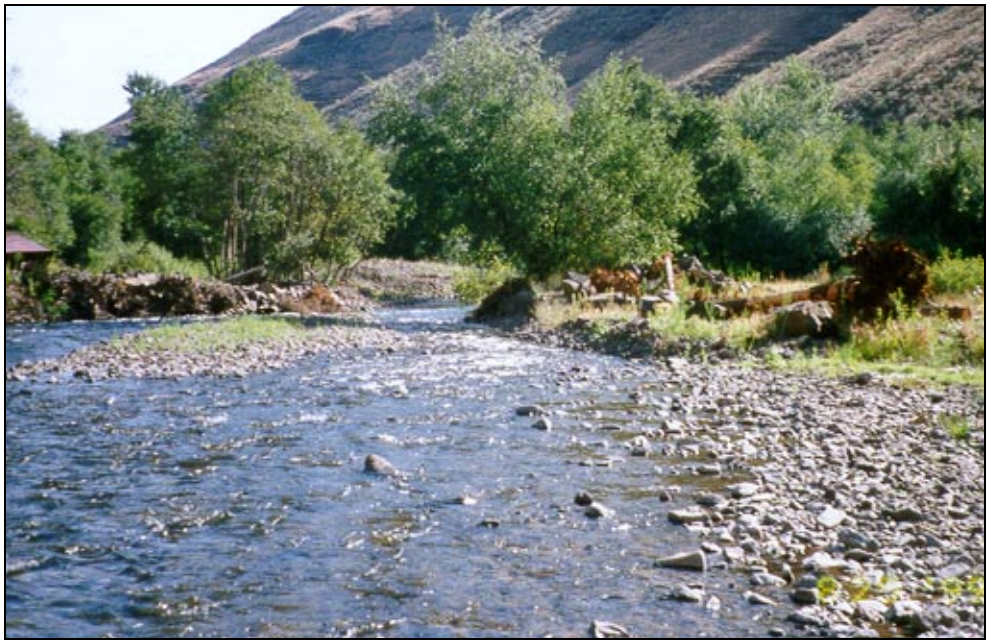
Thiessen In-Stream Habitat Project



Eroding streambank, riffle-run area with limited pocket water

Large logs w/root wads cabled to streambank for complexity and slower velocities

Koch Breakwater In-Stream Habitat Project



Riffle area on right bank with some pocket water at lower end

Logs w/root wads cabled along streambank creating cover and slowing velocities

Koch Meander Reconstruction Project

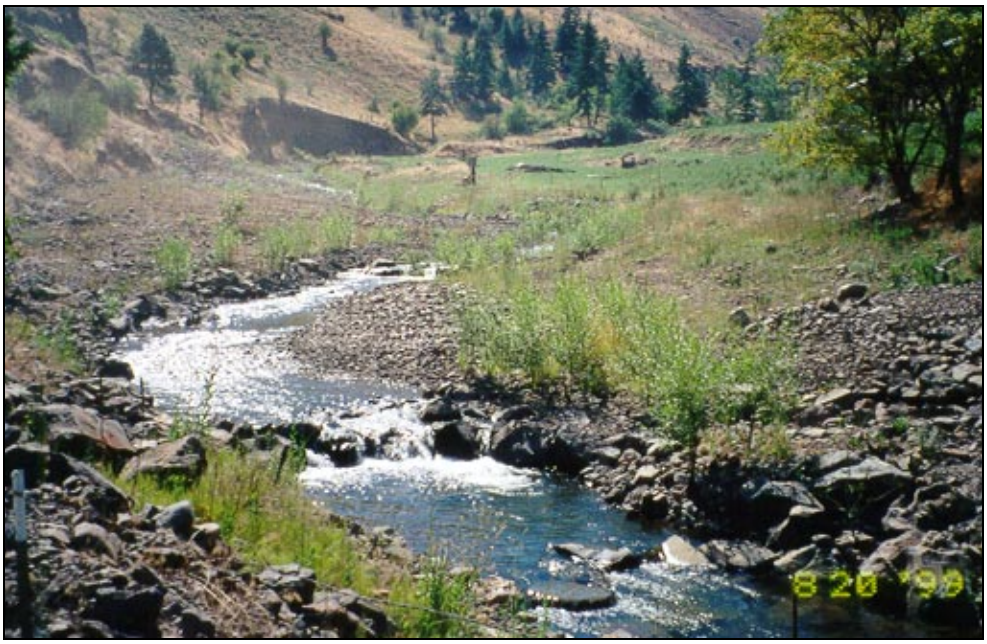
October, 1998 completed project

December, 1998 (3 times bankfull flows)

September, 1999 two J-hooked rock vanes installed to maintain meanders

Schlee Meander Reconstruction Project

Schlee project following two runoff seasons, headcut extending to first vortex



Vortex rock weir installed below to stop headcut

Project: *Asotin Creek In-Stream Project Monitoring*
Project # 99-54 (BPA # 99BI19067)

Background: The 1998 - 1999 *Asotin Creek In-Stream Project Monitoring* were identified by co-managers, NRCS and Conservation District personnel and private landowners. Project sites are located on the mainstem of Asotin Creek, Charley Creek and the Lick Fork of Asotin Creek. Over the past three years the District has installed numerous pool forming fish habitat structures. To document success of projects it was determined that we need to monitor structures pre- and post- installation to determine utilization by anadromous salmonids.

Objectives: The *Asotin Creek In-Stream Project Monitoring* are intended to determine pre- and post- in-stream habitat for spring chinook, summer steelhead, and bull trout habitat by meeting the following objectives:

1. Habitat assessment
2. Pre-project assessment of pools and juvenile densities
3. Post-project assessment of pools and juvenile densities

Projects: To achieve these goals two individual monitoring projects were completed. WDFW conducted pre and post-construction habitat and utilization surveys. These were completed on proposed 1998 in-stream fish habitat projects. Pool qualities, area, maximum and average site depth, mean pool depth, quantitative and qualitative counts of woody debris, and standard deviation of thalweg depth were measurements taken at each site. Northwest Management continued their habitat assessment of Headgate Park structures. They had completed a pre- and post-construction monitoring of in-stream habitat projects. This was another year's worth of data on post-construction utilization. Pool numbers, area, depth and quality, as well as discharge and snorkeling to determine utilization and age class of species.

Results: In 1996, 59 % of juvenile salmoids in the Headgate Park reach of Asotin Creek occupied pool habitats although pools only comprised 2 % of that available area. In 1997 pools comprised 3.3 % of Headgate Park reach and 71 % of juvenile salmonids occupied pool habitat. In 1998 the WDFW crew collected baseline data and identified in-stream and riparian habitat. In 1999 WDFW compared steelhead densities in reference sites to the previous years in-stream habitat projects. Project sites had higher densities of juvenile salmonids and pools contained higher abundances than other habitats (ie. riffles or runs). Vortex rock weir and J hooked rock veins with large woody debris (LWD) contained the highest densities of juvenile salmonids, validating Headgate Park monitoring.

Start Date: July 10, 1998
Completion Date: December 31, 1998

Total Costs: $9,000.00
BPA Costs: $9,000.00

1999 WDFW Pre- and Post- Habitat Restoration Monitoring

Habitat Assessments being performed by WDFW and Salmon Corps

Measuring stream width, number of pools, average pool depth and average stream depth

Project: *Asotin Creek Five Year Direct Seed*
Project # 99-52 (BPA #99BI19062, # 97AP37439 & # 97AP36208)

Background: The *1999 Asotin Creek Five Year Direct Seedl Projects* were identified by co-managers, NRCS and Conservation District personnel and private landowners. Project sites are located in the Asotin Creek watershed. Projects are on a cost-share basin with the landowners contributing at least 70% of project costs. Direct seed can reduce erosion by as much as 95%.

Objectives: The *Asotin Creek Five Year Direct Seed Projects* are intended to improve spring chinook, summer steelhead, and bull trout habitat by meeting the following objectives:

1. Upland BMP's Cost-Share for sediment reduction projects to reduce soil erosion and sediment rates to meet water quality standards

Projects: The District uses NRCS expertise and estimates for project costs. Direct seeding cost-share cannot exceed 200 acres per cooperator, pasture/hayland planting cannot exceed a per acre cost of $30.00/acre and is limited to 100 acres per year, sediment basin constructions are on a 50 % cost-share.

Results: 745.5 acres of direct seeding, 2 sediment basin construction, and 67 acres of pasture/hayland planting.

Start Date: January 1, 1999
Completion Date: September 13, 1999

Total Costs: $15,630.30 + $5,768.74 + $1,383.75
BPA Costs: $22,782.79
Cost-Share: $30,594.45

1999 Direct Seeding Program

No-till operation w/Palouse Zero-Till Drill on Peola Ridge

Minimal ground disturbance seeding winter wheat in a 17 inch rainfall zone